

THE CORRECT AUTHORITY FOR CARDAMINE CLEMATITIS (CRUCIFERAE)

T. R. DUDLEY¹

The most recent entry in the literature of *Cardamine clematitidis* appears on page 508 of the *Manual of the Vascular Flora of the Carolinas* by Radford, Ahles and Bell (1968). They cite "Shuttlew." as the authority for this taxon. This authority refers to Robert James Shuttleworth, a famed naturalist and collector who was the sponsor of Ferdinand Rugel, a prolific plant collector in eastern North America from 1840 and for many years thereafter until his death in 1879.

The various references in the literature to *Cardamine clematitidis* have consistently overlooked the fact that Shuttleworth cannot be cited as the sole publishing authority for the specific epithet, *clematitidis*. In addition to Radford, Ahles and Bell (1968), several other earlier North American references also provided descriptions and occasionally illustrations of *C. clematitidis*, and all accepted Shuttleworth as the sole publishing authority. These include: Chapman, *Flora of the Southeastern United States*, ed. 2, Supplement p. 605. 1887; *ibid.*, ed. 3, p. 25. 1897; Britton & Brown, *Illust. Flora of the Northern United States and Canada*, ed. 1. 2: 130. *fig. 1730*. 1897; *ibid.*, ed. 2. 2: 185. *fig. 2088*. 1913; Small, *Flora of the Southeastern United States*, ed. 1, p. 482. 1903; *ibid.*, ed. 2, p. 568. 1933; Fernald in Gray's *Manual of Botany*, p. 721. 1950; Gleason and Cronquist in Britton and Brown, *Illust. Flora of the Northeastern United States and Adjacent Canada* 2: 230, *fig. p. 231*. 1952; Gleason & Cronquist, *Manual of Vascular Plants of Northeastern United States and Adjacent Canada*, p. 340. 1963; and Radford, Ahles and Bell, *Guide to the Vascular Flora of the Carolinas*, p. 173. 1964.

¹Research Botanist, Herbarium, U.S. National Arboretum, Agricultural Research Service, Northeastern Region, U.S. Department of Agriculture, Washington, D.C. 20002.

In the course of evaluating the Ferdinand Rugel collections in the Isaac C. Martindale Herbarium at the U.S. National Arboretum, F. G. Meyer called my attention to an unidentified specimen of *Cardamine* collected by Rugel and accompanied by a signed holograph label that reads "Top of Smoky Mts. on the first Branch Nord Carolina Side. May 1866." Although this Rugel specimen clearly represents *C. clematitis*, it is not a part of the type.

The first published reference to *Cardamine clematitis* is on page 53 of Sereno Watson's *Bibliographic Index to North American Botany* (Smithsonian Miscellaneous Collections No. 258, 1878) that reads as follows: "*C. clematitis* Shuttl. in Herb. Gray, ined." It is evident that Watson took the name from Shuttleworth's printed herbarium *exsiccata* label which reads "*Cardamine clematitis* Shuttle. n. sp." and that name was used only as a *nomen nudum*. Watson's reference does not incorporate a validating description. On this basis alone, *clematitis* cannot be used as a valid specific epithet. It is listed, however, in *Index Kewensis* 1: 421. 1895 as: "*Clematitis* Shuttle. ex S. Watson"!

Later, in a paper by Asa Gray entitled "Some New North American Genera, Species, &c." (Proc. Am. Acad. Arts Sci. n.s., 7:45. 1880, a valid Latin description is provided. Gray precisely identified the plant as "*Cardamine clematitis* Shuttleworth in coll. distrib. Rugel," and explains that the original collection was from "wet ground along streamlets in the higher Iron or Smoky Mountains of North Carolina and Tennessee, collected in 1844 by Rugel . . ."

When dealing with nomenclatural problems of this nature, we are guided by Article 46 and its accompanying recommendations (particularly Recommendation 46C) in the *International Code of Botanical Nomenclature*, p. 46. 1972. The correct authority citation for *Cardamine clematitis* is *C. clematitis* Shuttleworth ex A. Gray, although it may be shortened, particularly in floristic treatments, to cite only the publishing author. Under no circumstances can Shuttleworth be assigned solitary authorship. The correct citation of the name is:

Cardamine clematitidis Shuttleworth ex A. Gray, Proc. Amer. Acad. Arts Sci., new series, 7: 45. 1880 — non Shutt. ex Watson, *Bibliog. Index North American Bot.*, p. 53, 1878.

The original collection and designated type of *Cardamine clematitidis* is Rugel No. 19 collected in 1844 in the Smoky Mts. of Tennessee. The holotype is deposited at GH, and cited duplicates (isotypes) are to be found at G-Herb. Boissier and W.

TYPE: Tennessee, Smoky Mountains ["in locis humidis et ad regionis super. montium Smoky Ms., Tennessee, Mai 1884."] May 1844, *Ferdinand Rugel* No. 19 (holotype, GH; isotypes BM, G, W).

The most complete set of Rugel's material, purchased from Shuttleworth, is at the British Museum; however, reference to the existence of such a specimen has not previously appeared in the literature. N. K. B. Robson of the British Museum (Natural History) assures me that a duplicate is retained at BM.

The one Rugel collection of *Cardamine clematitidis* not previously reported in the literature is a specimen collected, probably a unicate, after Rugel's professional contacts with Shuttleworth had ceased. The specimen was maintained in Rugel's personal herbarium until that herbarium was purchased in 1881 from Rugel's heirs by Isaac C. Martindale: North Carolina: "Top of Smoky Mts. on first Branch, Nord Carolina Side", *Ferdinand Rugel*, May 1866 (NA — from herbarium of Isaac C. Martindale).

The astute monographer of *Cardamine* and indefatigable expert on the Cruciferae, D. E. Schulz, in "Monographie der Gattung *Cardamine*" (Bot. Jahrb. 32: 440. 1903.) recognized Shuttleworth as responsible for the epithet *clematitidis*, but also recorded that Asa Gray provided a description of the species in Proc. Am. Acad. Arts Sci., n.s. 7: 45. 1880. Schulz examined the original 1844 material of *C. clematitidis* collected by Rugel (GH, G & W — but not BM), which was annotated and distributed by Shuttleworth; he also cited numerous additional collections made by J. K. Small, N. L.

& E. G. Britton & A. M. Vail, S. B. Buckley, J. K. Small & A. A. Heller, W. M. Canby, M. E. Hyams and J. W. Chickering.

SYNONYMS OF CARDAMINE CLEMATITIS

A point should also be discussed that concerns the synonymy of *Cardamine clematitidis* Shuttleworth ex A. Gray as presented by the Radford, Ahles and Bell publications (1964 & 1968). These works refer "*C. flagellaris*" (= *C. flagellifera* Schulz, Bot. Jahrb. 32: 405. 1903.) into synonymy under *C. clematitidis*. Although the type specimen of *C. flagellifera* (Biltmore Herbarium 7756) was originally annotated as *C. clematitidis*, it is not conspecific with *C. clematitidis*. Not only does *C. flagellifera* stand morphologically and ecologically distinct from *C. clematitidis*, but it was also assigned by Schulz within *Cardamine* to Sect. *Macrophyllum*, whereas *C. clematitidis* was referred by Schulz to the typical section. Small (1903) described *C. hugeri* that Radford, Ahles & Bell (1964 and 1968) sank under *C. clematitidis*. However, if referrable into synonymy at all, *C. hugeri*, a low altitude plant, more logically pertains to *C. flagellifera*.

In Watson's reference (*loc. cit.*) to *Cardamine clematitidis*, he cites as a synonym a "*Nasturtium officinale*" that appeared in the Supplement to Torrey and Gray, *A Flora of North America* 1: 666. 1843. In addition to validating, describing and typifying *C. clematitidis*, Gray (*loc. cit.*) explains Watson's confusion in incorrectly citing this "*Nasturtium officinale*" as a synonym of *C. clematitidis*. The original Rugel material, annotated and distributed from Switzerland by Shuttleworth, was a mixed collection. A part representing *C. clematitidis* "was mixed up with a Florida species intermediate between *Cardamine* and *Nasturtium*, first received from Leavenworth without fruit, and referred in the supplement to the first volume of Torrey and Gray's *Flora* to *N. officinale*." This element of "*Nasturtium officinale*", according to Gray, was later received from S. B.

Buckley; again later received from Shuttleworth's distributed collections of Rugel as *Cardamine curvisiliqua* Shuttleworth; and yet again received from Shuttleworth as *Nasturtium stylosum* Shuttleworth! The current fate of Leavenworth's "*Nasturtium officinale*" is not within the scope of this paper; however, both Chapman (1887) and Small (1903) equate Leavenworth's "*Nasturtium officinale*" with *Cardamine curvisiliqua* Shuttleworth.

U.S. NATIONAL ARBORETUM
WASHINGTON, D.C. 20002

A NEW FORM OF DIGITARIA SANGUINALIS. As a result of extensive field work in east-central Illinois an unusual form of the common crabgrass was found. This form differs from typical *Digitaria sanguinalis* (L.) Scop. in that long, spreading, papillose-based hairs are found scattered along both sides of the flattened rachis. These colorless hairs are 3-6 mm long (rarely 1 cm long) and on the specimens examined usually 1 to 5 hairs are found on each cm of rachis length. As a result of this difference the following form is described.

Digitaria sanguinalis (L.) Scop. forma **illinoensis** Ebinger
forma nova.

A forma *sanguinalis* differt pilis base papillosis in rhachidi.
TYPE: ILLINOIS: DOUGLAS CO.: 4 miles east of Hindsboro, Sargent Twp. (NE $\frac{1}{4}$, Sect. 3, R10E, T14N), in open field at edge of road, *J. E. Ebinger* 6845 (EIU). This area was revisited on 9 October 1969 and a second collection (*J. E. Ebinger* 9282) was made at that time (EIU, ISM).

Long, papillose-based hairs are known in a few species of *Digitaria*. The presence of these hairs is an important diagnostic characteristic used by Hitchcock (1935), Henrard (1950), and many others to separate the tropical *Digitaria horizontalis* Willd. from other members of the genus. The hairs in this species are similar in all respects to those